## Problem Solving with Proportional Relationships

## Use What You Know

You have learned how to recognize and represent proportional relationships. Now you can apply this understanding to solve problems with percents. Take a look at this problem.

It's the end of the soccer season and all equipment at the Sports Stop is on sale. What is the sale price of a soccer ball that regularly sells for $\$ 28$ ?

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Use the math you already know to help understand the problem.
a. What does " $20 \%$ off the regular price" mean?
b. How do you write $20 \%$ as a decimal? $\qquad$
c. What is the regular price of the soccer ball? $\qquad$
d. How would you find $20 \%$ of the regular price? What would you do with this amount to find the sale price?
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$\qquad$
e. What is the sale price?
f. Summarize the steps you would take to find the sale price given the regular price and a percent discount.

## Find Out More

You can use a bar model to represent the problem from the previous page. The model helps you to see the relationship between the parts and the whole. The sale price and the amount of the discount make up the regular price.

| Regular Price <br> $\$ 28.00$ |  |
| :---: | :---: |
| Sale Price <br> $s$ | Discount |
| $20 \%$ of $\$ 28.00$ |  |

You can write an equation to represent this relationship where $s=$ sale price.

$$
s=28-(20 \% \text { of } 28)
$$

Percents are used in many different real-world situations. Here are some other types of real-world situations involving percent that you will work with in this lesson.
markup: a percent added to the cost of an item to determine the selling price
simple interest: a percent of an amount borrowed that is paid to the lender in addition to the amount borrowed
tax: a percent of a purchase that is added to the purchase and paid to a government gratuity: a percent added on to the cost of a service, for example a tip given to a waiter commission: a percent of a sales amount awarded to the person making the sales

## Reflect

1 In the bar model above, the discount is $20 \%$. What percent of the regular price is the sale price? Explain how you could solve the problem using this information.
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